Draft Workplan ITN v3.0

Background

Currently more than a dozen Metropolitan Planning Organizations (MPOs) as well as the California Department of Transportation (Caltrans) model transportation demand over various components of the California on-road transportation network. These individual networks have been used in past air quality modeling studies to aid in estimating emissions from on-road mobile sources. For urban scale air quality modeling domains (i.e., on the order of 300 km by 300 km), it was feasible to routinely use one or two of these individual networks to help estimate on-road mobile source emissions. However, as the extent of air quality modeling domains has grown to encompass regions on the order of 600 km by 600 km or larger, utilization of individual transportation networks to help estimate on-road mobile source emissions has grown much more difficult.

In an effort to help streamline the process of using the individual transportation networks for use in estimating on-road mobile source emissions estimates, the California Air Resources Board developed the California statewide Integrated Transportation Network (ITN). Version one of the ITN (Wilkinson, 2004), which is a seamless on-road transportation network covering the entire state of California, resulted from the integration of local MPO transportation networks as well as the Caltrans statewide network (Seitz, 2001). Version two of the ITN (Wilkinson, 2006) utilized a new Caltrans statewide network (Adamu, 2004) and incorporated additional MPO transportation networks. Further, ITN v.2.0 incorporated not only link-based networks but also incorporated the polygon-based transportation analysis zone (TAZ) coverages from each network. The inclusion of the TAZ coverages in ITN v.2.0 allowed for the distribution of intrazonal VMT along links in the TAZ contrasted with the treatment of intrazonal VMT as single points (i.e., TAZ centroids) with ITN v.1.0.

Versions one and two of the ITN were used to develop inputs to version four of the Direct Travel Impact Model (DTIM) (Fieber and Ireson, 2001). DTIM coupled with EMFAC2002 (ARB, 2004) were used to estimate on-road mobile source emissions for the Central California Ozone Study (CCOS) (Fujita *et al.*, 2001).

Purpose

Recognizing the need for improvements to the prior two versions of the ITN, ARB desires to construct version three of the ITN. ITN v.3.0 will take advantage of any recent updates to the MPOs' and CalTrans' travel demand data. Further, ITN v.3.0 will be ported from its current ARC/Info platform to the open source PostgreSQL and PostGIS platforms. PostgreSQL will serve as the data base to house the ITN data, and PostGIS will serve as the GIS platform. In addition, ARB wants to create ITN v.3.0 for the following reasons:

- Improve their ability to conduct quality assurance checks;
- Ensure flexibility in coding for future changes; and

- In the longer term, move the ITN from being a one-point-in-time data storage tool to a data management system from which data can be transferred to transportation-emissions models.

Work Plan Structure

Task 1: Collect New Data

Task 2: Use of Older Transportation Data

Task 3: Cast Data to Common Format and Common Year

Task 4: Extract EMFAC Data

Task 5: Combine Data to Create ITN v.3.0